

PATENT SPECIFICATION

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(54) TACKY FLOOR-MATS WITH IMPROVED SHEET SEPARATING MEANS

(71) I, JOHN JOSEPH NAPPI, a citizen of the United States of America, of 80 Beckley Road, Berlin, Connecticut, United States of America, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to tacky floor-mats of the type employing a stack of pressure sensitive adhesive coated sheets such as disclosed in my prior United States patent No. 3,083,393 and my United Kingdom patent Specification No. 1,138,103.

In prior art tacky floor-mats of the pressure sensitive type the conventional practice has been to provide a tab of release paper material between adjacent sheets at or near the corner of the stack to permit an initial finger hold to be obtained for peeling the used sheets from the top of the stack. By the nature of pressure sensitive adhesives the stack of sheets becomes increasingly more tightly bonded as the pedestrian traffic passes thereover due to the high unit pressure with which the feet of the users compress the sheets and the time duration in which the sheets are held in adhesive contact. Thus it has been found that it is extremely difficult at times to separate a single sheet from the top of the stack, since when only one corner of the stack is freed by the release paper interleaf, it is possible to grip mistakenly two or more sheets and thus considerable waste is involved. It is also inconvenient to peel tightly bonded sheets when only a corner is freed by the release agent, since until a complete side has been freed from adhesive bond, the matter of gripping and starting a progressive peeling action presents some considerable difficulty to the maintenance personnel who are required to change the soiled top sheets.

According to the present invention there is provided a tacky floor-mat for adhesively cleaning the soles of shoes or the like as users move over the exposed top surface of

the mat, comprising a stack of pliable peelable pressure sensitive adhesive coated sheets stacked adhesive side up to provide a tread surface; each of which sheets, except for the top sheet in said stack, is adhered to the undersurface of the next higher sheet in said stack and exposed for use in succession as the sheets are peeled from the top of said stack; a strand between two adjacent adhered sheets of said stack and protruding from one edge of said stack, said strand separating the adhesive bond between said adjacent adhered sheets when said strand is pulled; and means for retaining the bottom surface of said stack on a supporting surface against the upward pull of a shoe or the like adhered to the top sheet.

Thus, in accordance with the present invention, the peeling of adhesively bonded sheets is rendered relatively simple and at the same time assurance is provided that only a single sheet will be released for peeling thereby preventing the costly practice of disposing of two or more adhered sheets when only the top soiled sheet is intended to be discarded. At the same time the peeling operation is simplified since the present invention in a preferred form permits the releasing of a substantial edge portion of the soiled top sheet.

Specific embodiments of the invention will now be described by way of example with reference to the accompanying drawings, wherein:

Fig. 1 is a perspective view of a tacky floor-mat as employed in a conventional tacky floor-mat frame in accordance with my first-mentioned prior patent, and embodying the present invention.

Fig. 2 is a perspective view of an insert corresponding to said prior patent and showing the action of the release means in separating the end of the top sheet in the stack in accordance with the present invention.

Fig. 3 is a fragmentary view in section showing details of the construction of the insert of Fig. 2.

Fig. 4 is a perspective view of a double-sided mat corresponding to that disclosed in the second aforementioned patent with the present invention applied thereto.

5 Fig. 5 is an end view of Fig. 4.

Fig. 6 is a view similar to Fig. 5, but showing the release of the entire remaining pad and bottom stack of sheets.

10 Fig. 7 is a partial view showing a pull tab.

Fig. 8 is a partial view showing an improved pull tab.

Referring to Fig. 1, a tacky floor-mat and frame installation is shown in which a frame 15 11 having bevelled edges is provided to receive an insert tacky floor-mat 12 consisting of a plurality of pressure sensitive adhesive coated sheets. The mat 12 can be placed directly in the frame or can be mounted on a "Masonite" 20 (registered Trade Mark) board insert in accordance with conventional practice. As indicated in Fig. 1, a strand 13 runs under each sheet substantially the full width thereof and projects from one edge of the stack. The 25 projecting end is folded over onto the top surface of the stack 12 and adhesively retained thereon. The next lower sheet in the stack similarly has a strand 13' which projects therefrom and is folded over to underlie the top sheet in the stack 12 shown in Fig. 30 1. In this manner each sheet in the stack is provided with a strand such as 13 or 13' which extends substantially the full width dimension of the stack 12 and extends from the edge of the stack as shown. Any suitable 35 gripping means can be provided at the end of the strands 13 and 13' such as a loop 15.

40 The strands 13, 13' and the similar strands between the remaining adjacent adhered sheets in the stack 12 are preferably of extremely thin material so as not to unduly add to the bulk of the stack and particularly so as not to show the general outline of their location 45 as the top sheet becomes soiled. For this purpose any kind of strong string, wire or monofilament nylon line may be used as well as various forms of thin ribbon and other materials. All that is required is that the 50 size of the strand 13 and 14 be of small diameter and have adequate strength for the required task hereinafter described. Materials which release lint or other fibers should be avoided in view of the general application of 55 tacky floor-mats in clean room areas and the surface character of the strands should be such that it will readily peel from the pressure sensitive adhesive used on the sheets in the stack 12 but will not tend to pull out axially 60 so as to prevent the breaking of the bond between adjacent sheets.

Referring now to Fig. 2, the stack 12 is shown on an insert base 16 to form a unit. The base 16 may be inserted in a frame 11 or 65 used as the floor base for supporting the stack

12. If used without a frame the insert base 16 should have suitable provision for holding it on the floor whenever the unit does not have sufficient weight to be self-retaining on the floor level when in use. Whenever it is 70 desired to change the top sheet in the stack the maintenance personnel or other operator grips the loop 15 or other gripping means at the end of strand 13 and pulls the strand out from the edge 17 of the top sheet. By 75 pulling the strand 13 outward from the edge 17 the strand 13 has a sweeping motion from its anchored portion between the adhered sheets to the free portion which has passed 80 out from between the adhered sheets. By virtue of the sweeping motion the adhesive bond between the sheets adjacent the strand 13 is broken and by the time the loop 15 has been pulled to completely free the strand 13 the entire edge 17 of the top sheet has 85 been released. It is then a simple matter to grip the released edge 17 and peel the top sheet from the stack 12.

Referring to Fig. 3, it will be seen that strands 13, 13' and 13'' are provided be- 90 tween each pair of adhered sheets in the stack 12. While only four sheets have been shown in the stack 12 of Fig. 3, it will be understood that any number of sheets can be used and that a strand 13 will be placed 95 between each pair of adhered sheets in the stack. Fig. 3 also shows details of the loops 15 which may be formed by folding back the strand upon itself and, if desired, knotting it as at 121. 100

Referring now to Fig. 4, a modification of the invention is shown in which a top stack 21 of pressure sensitive sheets with adhesive 105 side up is secured to a foam pad 22 which has on the bottom thereof a bottom stack 23 of pressure sensitive adhesive sheets adhesive side down. This construction corresponds to that described with reference to Fig. 3 of the Nappi et al second referenced patent Specifica- 110 tion No. 1,138,103. In each case the stacks 21 and 23 are adhered to the foam pad 22 and the device is adapted for use either as an insert in a frame or for direct application to the floor with the entire unit being in- 115 verted as soon as the top stack 21 is exhausted except for the bottom sheet 24 in the top stack 21. As described with reference to Fig. 1, the individual sheets of the stacks 21 and 23 are provided with strands 13 and pulling 120 loops 15 to permit release and peeling of the individual sheets in the stacks.

Above the bottom sheet 24 in the top stack 21, however, a strand 25 is provided which has an extension 26 which passes around the 125 edge of the pad 22 and the stack 23 and underlies the bottom surface of the stack 23. As shown in Fig. 5, the strand 13 is capable of peeling the top sheet 20 in stack 21 as previously described. As further shown in Fig. 6, by virtue of the connecting extension 130

26, strand 25 releases sheet 27 directly above bottom sheet 24 and continued pull on the strand 25 lifts the entire remaining pad 22 and stack 23 from the surface 29 to which the tacky floor-mat was initially adhered. Thus at the time the next to the last sheet 27 in the top stack 21 is soiled so that it needs to be changed the strand 25 can be pulled to release sheet 27 which is peeled away to expose the fresh adhesive surface of sheet 24. The bond between the bottom sheet of the stack 23 and the floor or frame surface 29 is then released as shown in Fig. 6 by continued pull on the strand 25 so that the fresh adhesive surface 24 can be used to hold the inverted pad to the floor support surface 29 and thus expose the adhesive surfaces of stack 23 which are now upwardly facing for use as a shoe sole cleaning tacky floor-mat.

Referring to Fig. 7, a modification of the pull gripping means 15 is shown in which the loop of the strand is enclosed within a folded label 31 coated on its mutually facing surfaces with a pressure sensitive adhesive. The label 31 can readily be attached to the loop 15 to make an attractive appearance with a legend printed thereon indicating the number of sheets remaining in the stack and that the tab 31 should be pulled to change the top sheet. The adhesive on the label 31 need not necessarily adhere strongly to the material of the loop 15 since the folded configuration will be retained within the label 31 by the adhesive bond between the inner surfaces of the folded label. This physical anchoring of the loop 15 permits the knot 121 to be omitted, if desired, since one or more folds in the strand material will securely anchor the strand 13 within the label 31. If the outer surface of the label 31 is a release paper it can readily be peeled from the adhesive surface of the sheets when it is desired to be used and yet retained thereon prior to use by the mild adhesive bond which pressure sensitive adhesives have for release papers.

Fig. 8 shows another form of pull tab in which a thin flat ring 32 is attached to the strand 13. The ring 32 is preferably made of a thin flexible plastic sheet material of considerable strength such as "Mylar" (registered Trade Mark). When used as a finger ring to pull the strand 13, the annular width of the ring 32 flexes to lie flat against the finger and thus does not tend to cut the skin as is possible with a loop made of thin wire or string. The ring 32 is adhered to the under side of a pressure sensitive adhesive coated label or cover 33 which may be printed on its top side with the relevant information as previously described for Fig. 7. Since the adhesive surface of label 33 is normally downward facing, a small patch 34 of release paper is interposed between the adhesive surfaces of the label 33 and the top sheet in the stack 12 to permit easy initial peeling of the label

33. Alternatively, the ring 32 may be made of a material such as "Teflon" (registered Trade Mark) with release surface characteristics. Each sheet in the stack 12 is provided with a similar strand 13, label 33, ring 32 and release paper patch 34 to permit each sheet to be removed in turn as they become soiled.

WHAT I CLAIM IS:—

1. A tacky floor-mat for adhesively cleaning the soles of shoes or the like as users move over the exposed top surface of the mat, comprising a stack of pliable peelable pressure sensitive adhesive coated sheets stacked adhesive side up to provide a tread surface, each of which sheets, except for the top sheet in said stack, is adhered to the undersurface of the next higher sheet in said stack and exposed for use in succession as the sheets are peeled from the top of said stack; a strand between two adjacent adhered sheets of said stack and protruding from one edge of said stack, said strand separating the adhesive bond between said adjacent adhered sheets when said strand is pulled; and means for retaining the bottom surface of said stack on a supporting surface against the upward pull of a shoe or the like adhered to the top sheet.
2. A tacky floor-mat as claimed in claim 1, wherein the strand extends at least partially across a transverse dimension of said sheets.
3. A tacky floor-mat as claimed in claim 1 or claim 2, wherein the protruding end of said strand is folded over the edge of the next higher sheet and is retained on the top surface thereof.
4. A tacky floor-mat as claimed in any preceding claim, wherein the end of said strand is provided with gripping means.
5. A tacky floor-mat as claimed in claim 4, in which said gripping means comprises a flat loop in the end of said strand and a cover for said loop, said cover anchored to said loop and having a release outer surface readily peelable from the pressure sensitive adhesive on said sheets.
6. A tacky floor-mat as claimed in claim 4, wherein said gripping means comprises a flat wide flexible ring.
7. A tacky floor-mat as claimed in claim 6, including a pressure sensitive adhesive coated cover adhered to said ring and to the adhesive surface of the adjacent sheet of said stack, a patch of release paper being interposed between at least a portion of the joined adhesive surfaces of said cover and said sheet.
8. A tacky floor-mat as claimed in any preceding claim, including a plurality of strands, each such strand being interleaved between each two adjacent adhered sheets in said stack.
9. A tacky floor-mat as claimed in claim 8, including a flat, porous, resilient and compressible pad substantially co-extensive with the area of said stack; means for securing

- the top surface of said pad to the undersurface of the bottom sheet in said stack with the adhesive surfaces of said sheets facing upward; a second stack of sheets secured to the
- 5 bottom surface of said pad with the adhesive surfaces of said sheets in said second stack facing downward; and a strand extending under the bottom sheet of said second stack and protruding from one edge of said second
- 10 stack to fold over the edges of said second stack and said pad and across the top surface of the bottom sheet of the top stack adhered to the top surface of said pad; thereby providing for releasing the sheet in said top
- 15 stack adhered to said bottom sheet in said top stack and by continued pull to release

the adhesive bond of the bottom sheet of said bottom stack from a supporting surface to permit inversion of the remainder of said tacky floor-mat.

10. A tacky floor-mat substantially as hereinbefore described with reference to and as illustrated in Figures 1 to 3, or Figures 5 to 6, or said Figures as modified by Figure 7 or Figure 8 of the accompanying drawings.

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